DIESEL: PREVENTIVE MAINTENANCE

COURSE DESCRIPTION

Diesel: Preventive Maintenance Inspection is a course offering training in the inspection and servicing of heavy trucks. The course introduces students to proper procedures and practices for preventive maintenance and servicing. Students learn to perform entry-level technician inspection tasks. Students upon completion of the course will be eligible to take the ASE (Automotive Service Excellence) examination for Heavy Truck Preventive Maintenance.

Recommended: Transportation Core, Algebra I, or Math for Technology II; Physical Science or Principles of Technology I, (may be concurrent)

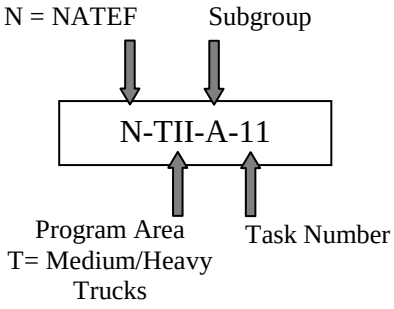
Required: **A** minimum of 105 hours must be dedicated to diesel preventive maintenance to meet minimum standards set by NATEF.

Recommended Credits: 1

Number of Competencies: 43
All competencies are NATEF rated P-1. NATEF certified programs are required to complete 100% of the competencies.

Recommended Grade Level(s): 10th, 11th, or 12th

Notes: Course is aligned with NATEF tasks list for medium/heavy trucks. Items have been organized based on the requirements of the state-required course description format. NATEF tasks are referenced with the corresponding Performance Standards. Codes are as follows:



DIESEL: PREVENTIVE MAINTENANCE INSPECTION STANDARDS

1.0 Students will perform safety examinations and maintain safety records.

2.0 Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

3.0 Students will integrate reading, writing, math, and science skills and understand the impact of academic achievement in the work place.

4.0 Student will demonstrate proper procedures for inspecting and servicing engine systems.

5.0 Students will demonstrate proper procedures for inspecting vehicle cab and hood.

6.0 Students will demonstrate proper procedures for inspecting vehicle electronics and electrical systems and components.

7.0 Student will demonstrate proper procedures for inspecting vehicle frames and chassis.

DIESEL: PREVENTIVE MAINTENANCE INSPECTION

STANDARD 1.0

Students will perform safety examinations and maintain safety records.

LEARNING EXPECTATIONS

The student will:

1.1 Demonstrate a positive attitude regarding safety practices and issues.
1.2 Use and inspect personal protective equipment.
1.3 Inspect, maintain, and employ safe operating procedures with tools and equipment, such as hand and power tools, ladders, scaffolding, and lifting equipment.
1.4 Demonstrate continuous awareness of potential hazards to self and others and respond appropriately.
1.5 Assume responsibilities under HazCom (Hazard Communication) regulations.
1.6 Adhere to responsibilities, regulations, and Occupational Safety & Health Administration (OSHA) policies to protect coworkers and bystanders from hazards.
1.7 Adhere to responsibilities, regulations, and Occupational Safety & Health Administration (OSHA) policies regarding reporting of accidents and observed hazards, and regarding emergency response procedures.
1.8 Demonstrate appropriate related safety procedures.
1.9 Pass with 100 % accuracy a written examination relating to safety issues
1.10 Pass with 100% accuracy a performance examination relating to safety.
1.11 Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

1.1A Is attentive during safety discussions.
1.1B Actively seeks information about safe procedures.
1.1C Responds positively to instruction, advice, and correction regarding safety issues.
1.1D Does not deliberately create or increase hazards, such as by horseplay, practical jokes, or creating distractions.
1.1E Reports to school or work physically ready to perform to professional standards, such as rested, or not impaired by medications, drugs, alcohol, etc.
1.2 Selects, inspects, and uses the correct personal protective equipment for the assigned task.
1.3A Inspects power tools for intact guards, shields, insulation, and other protective devices.
1.3B Inspects extension cords for the presence of a functional ground connection, prior to use.
1.3C Operates and maintains tools in accordance with manufacturer's instructions and as required by regulation or company policy.
1.3D Properly places and secures ladders and scaffolding prior to use.
1.4A Is observant of personnel and activities in the vicinity of the work area.
1.4B Warns nearby personnel, prior to starting potentially hazardous actions.
1.5A When asked to use a new hazardous material, retrieves MSDSs (material safety data sheets), and identifies the health hazards associated with the new material.
1.5B Reports hazards found on the job site to the supervisor.
1.6A Erects shields, barriers, and signage to protect coworkers and bystanders prior to starting potentially hazardous tasks.

1.6B Provides and activates adequate ventilation equipment as required by the task.
1.7A Reports all injuries to self to the immediate supervisor.
1.7B Reports observed unguarded hazards to their immediate supervisor.
1.8A Complies with personal assignments regarding emergency assignments.
1.9A Passes with 100% accuracy a written examination relating specifically to content area.
1.10A Passes with 100% accuracy a performance examination relating specifically to welding tools, equipment and supplies.
1.11A Maintains a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.

SAMPLE PERFORMANCE TASKS

These are sample projects of the type and scale recommended to address one or more of the learning expectations for this standard. Other projects can be used at the instructor's discretion.

- Conduct a practice drill simulating a hazardous solvent spill in which an emergency action plan is to be implemented.
- Instruct a visitor to obviously approach the vicinity of a student conducting a hazardous activity and note the level of awareness demonstrated by the student.
- For a project requiring the use of ladders and/or scaffolding, note the proper placement and securing procedures followed by students.

INTEGRATION LINKAGES

Language Arts, Mathematics, Technical Algebra, Technical Geometry, Algebra, Geometry English IV: Communication for Life, SkillsUSA Technical Championships, American Welding Society (AWS), Guide for Training and Qualification of Entry Level Welder, National Center for Construction Education Research (NCCER), Secretary's Commission on Achieving Necessary Skills (SCANS), Professional Development Program, SkillsUSA

DIESEL: PREVENTIVE MAINTENANCE

STANDARD 2.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:

2.1 Cultivate positive leadership skills.
2.2 Participate in the student organization directly related to their program of study as an integral part of classroom instruction.
2.3 Assess situations, apply problem-solving techniques and decision-making skills within the school, community, and workplace.
2.4 Participate as a team member in a learning environment.
2.5 Respect the opinions, customs, and individual differences of others.
2.6 Build personal career development by identifying career interests, strengths, and opportunities.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

2.1A Demonstrates character and leadership using creative-and critical-thinking skills.
2.1B Uses creative thought process by "thinking outside the box."
2.2A Relates the creed, purposes, motto, and emblem of their student organization, directly related to personal and professional development.
2.2B Plans and conducts meetings and other business according to accepted rules of parliamentary procedure.
2.3A Makes decisions and assumes responsibilities.
2.3B Analyzes a situation and uses the Professional Development Program or career technical student organization materials directly related to the student's program of study to resolve it.
2.3C Understands the importance of learning new information for both current and future problem solving and decision making.
2.4A Organizes committees and participates in functions.
2.4B Cooperates with peers to select and organize a community service project.
2.5A Researches different customs and individual differences of others.
2.5B Interacts respectfully with individuals of different cultures, genders, and backgrounds.
2.5C Resolves conflicts and differences to maintain a smooth workflow and classroom environment.
2.6A Creates personal career development by identifying career interests, strengths, and opportunities.
2.6B Identifies opportunities for career development and certification requirements.
2.6C Plans personal educational paths based on available courses and current career goals.
2.6D Creates a resumé that reflects student's skills, abilities, and interests.

SAMPLE PERFORMANCE TASKS

- Create a leadership inventory and use it to conduct a personal assessment.
- Participate in various career technical student organizations' programs and/or competitive events.
- Implement an annual program of work.
- Prepare a meeting agenda for a specific career technical student organization monthly meeting.
- Attend a professional organization meeting.
- Develop a program of study within their career opportunities.
- Participate in the American Spirit Award competition with SkillsUSA.
- Complete *Professional Development Program Level I and Level II*, SkillsUSA.

INTEGRATION LINKAGES

SkillsUSA, *Professional Development Program*; SkillsUSA; Communications and Writing Skills; Teambuilding Skills; Research; Language Arts; Sociology; Psychology; Math; Technical Math; English IV: Communication for Life; Social Studies; Problem Solving; Interpersonal Skills; Employability Skills; Critical-Thinking Skills; Secretary's Commission on Achieving Necessary Skills (SCANS); Chamber of Commerce; Colleges; Universities; Technology Centers; Secretary's Commission on Achieving Necessary Skills (SCANS)

DIESEL: PREVENTIVE MAINTENANCE

STANDARD 3.0

Students will integrate reading, writing, math, and science skills and understand the impact of academic achievement in the work place.

LEARNING EXPECTATIONS

The student will:

3.1 Assume responsibility for accomplishing classroom assignments and workplace goals within accepted time frames.
3.2 Develop advanced study skills.
3.3 Demonstrate and use written and verbal communication skills.
3.4 Read and understand technical documents such as regulations, manuals, reports, forms, graphs, charts, and tables.
3.5 Apply the foundations of mathematical principles such as algebra, geometry, and advanced math to solve problems.
3.6 Apply basic scientific principles and methods to solve problems and complete tasks.
3.7 Understand computer operations and related applications to input, store, retrieve, and output information as it relates to the course.
3.8 Research, recognize, and understand the interactions of the environment and *green* issues as they relate to the course work and to a global economy.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

3.1A Uses appropriate time management to achieve goals.
3.1B Arrives at school on time each day.
3.1C Completes assignments and meets deadlines.
3.2A Assesses current personal study skills.
3.2B Demonstrates advanced note-taking ability.
3.2C Formulates appropriate study strategies for given tasks.
3.3A Communicates ideas, information, and messages in a logical manner.
3.3B Fills out forms, reports, logs, and documents to comply with class and project requirements.
3.4A Reads and understands technical documents and uses industry jargons, acronyms, and terminology appropriately.
3.4B Recognizes the meaning of specialized words or phrases unique to the career and industry.
3.5A Utilizes computation in adding, subtracting, multiplying, and dividing of whole numbers, fractions, decimals, and percents.
3.5B Chooses the right mathematical method or formula to solve a problem.
3.5C Performs math operations accurately to complete classroom and lab tasks.
3.6A Understands scientific principles critical to the course.
3.6B Applies scientific principles and technology to solve problems and complete tasks.
3.6C Has knowledge of the scientific method (e.g., identifies the problem, collects information, forms opinions, and draws conclusions).
3.7A Uses basic computer hardware (e.g., PCs, printers) and software to perform tasks as required for the course work.
3.7B Understands capabilities of computers and common computer terminology (e.g.,

program, operating system).

3.7C Applies the appropriate technical solution to complete tasks.

3.7D Inputs data and information accurately for the course requirements.

3.8A Researches and recognizes *green* trends in career area and industry.

3.8B Examines current environmentally-friendly trends.

3.8C Applies sustainability practices by understanding processes that are non-polluting, conserving of energy and natural resources, and economically efficient.

SAMPLE PERFORMANCE TASKS

- Examine and compile different learning styles for portfolios.
- Create calendars containing all activities and obligations for one month. Discusses how to handle conflicting or competing obligations then complete daily and weekly plans showing tasks, priorities, and scheduling.
- Complete self-assessments of study habits.
- Compute precise and exact measurements.
- Explore study strategies for different subjects and tasks then analyze two homework assignments and select the best strategies for completing them.
- Create "life maps" showing necessary steps or "landmarks" along the path to personal, financial, educational, and career goals.
- Take notes during counselor classroom visits and work in small groups to create flow charts of the path options.
- List attitudes that lead to success then rate individually in these areas. Work together to suggest strategies for overcoming the weaknesses identified own and partners' self-assessments then share with the class the strategies developed.
- Research the Internet and other technology to collect and analyze data concerning climate change.
- Keep a data file of alternative energy sources and the sources' impact on the environment.
- Develop a recycling project at home or for the school environment.

INTEGRATION LINKAGES

SkillsUSA, *Professional Development Program*; SkillsUSA; Communications and Writing Skills; Teambuilding Skills; Research; Language Arts; Sociology; Psychology; Math; Technical Math; English IV: Communication for Life; Social Studies; Problem Solving; Interpersonal Skills; Employability Skills; Critical-Thinking Skills; Secretary's Commission on Achieving Necessary Skills (SCANS); Chamber of Commerce; Colleges; Universities; Technology Centers; Secretary's Commission on Achieving Necessary Skills (SCANS)

DIESEL: PREVENTIVE MAINTENANCE INSPECTION

STANDARD 4.0

Students will demonstrate proper procedures for inspecting and servicing vehicle engine systems.

LEARNING EXPECTATIONS

The student will:

4.1 Inspect the vehicle engine system.
4.2 Inspect the fuel system.
4.3 Inspect the air induction and exhaust system.
4.4 Inspect the cooling system.
4.5 Inspect the lubrication system.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

4.1A Checks engine starting/operation (including unusual noises, vibrations, exhaust smoke, etc.) and records idle and governed rpm (rotations per minute).
4.1B Inspects vibration damper.
4.1C Inspects belts, tensioners, and pulleys; checks and adjusts belt tension.
4.1D Checks engine oil level and condition; checks dipstick seal.
4.1E Inspects engine mounts for looseness and deterioration.
4.1F Checks engine for oil, coolant, air, fuel, and exhaust leaks (engine off and running)
4.1G Checks engine compartment wiring harnesses, connectors, and seals for damage and proper routing.
4.2A Checks fuel tanks, mountings, lines, caps, and vents.
4.2C Drains water from fuel system.
4.2D Services water separator/fuel heater; replace fuel filter(s); primes and bleeds fuel system.
4.3A Checks exhaust system mountings for looseness and damage.
4.3B Checks engine exhaust system for leaks, proper routing, and damaged or missing components to include exhaust gas recirculation (EGR) system and aftermarket devices if equipped.
4.3C Checks air induction system; piping, charge air cooler, hoses, clamps, and mountings; checks for air restrictions and leaks.
4.3D Inspects turbocharger for leaks; checks mountings and connections.
4.3E Checks operation of engine compression/exhaust brake.
4.3F Services or replaces air filter as needed; checks and resets air filter restriction indicator.
4.3G Inspects and services crankcase ventilation system.
4.4A Checks operation of fan clutch.
4.4B Inspects the radiator (including air flow restriction, leaks, and damage) and mountings.
4.4C Inspects fan assembly and shroud.
4.4D Pressure tests cooling system and radiator cap.
4.4E Checks coolant for contamination, additive package concentration, and protection level (freeze point).
4.4F Services coolant filter.
4.4G Inspects water pump for leaks and bearing play.
4.5A Changes engine oil and filters; visually checks oil for coolant or fuel contamination; inspect and clean magnetic drain plug..

4.5B Take an engine oil sample.

SAMPLE PERFORMANCE TASKS

- Demonstrate process for inspecting engine system.
- Determine if air filter needs replacement and replace if needed.
- Determine if engine oil is contaminated and change if needed.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair.
- Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacture allowances for each item on the work order.
- Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Science, Math, Math for Technology, Technology Literacy, Applied Communications, Problem-Solving, National Institute for Automotive Service Excellence (ASE), National Automotive Technician Education Foundation (NATEF), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), Secretary's Commission on Achieving Necessary Skills (SCANS), SkillsUSA.

DIESEL: PREVENTIVE MAINTENANCE INSPECTION

STANDARD 5.0

Students will demonstrate proper procedures for inspecting vehicle cab and hood.

LEARNING EXPECTATIONS

The student will:

5.1 Inspect instruments and controls.
5.2 Inspect safety equipment.
5.3 Inspect hardware.
5.4 Inspect heating, ventilation, and air conditioning (HVAC).

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

5.1A Inspects key condition and operation of ignition switch.
5.1B Checks warning indicators.
5.1C Checks instruments; record oil pressure and system voltage.
5.1D Checks operation of electronic power take off (PTO) and engine idle speed controls (if applicable).
5.1E Checks HVAC controls.
5.1F Extracts engine monitoring information using a diagnostic tool or on-board diagnostic system.
5.1G Checks operation of all accessories.
5.1H Uses diagnostic tool or on-board diagnostic system to retrieve engine monitoring information; check and record diagnostic codes and trip/operational data (including engine, transmission, ABS, and other systems).
5.2A Checks operation of electric/air horns and reverse warning devices.
5.2B Checks condition of safety flares, spare fuses, triangles, fire extinguisher, and all required decals.
5.2C Inspects seat belts and sleeper restraints.
5.2D Inspects wiper blades and arms.
5.3A Check operation of wiper and washer.
5.3B Inspect windshield glass for cracks or discoloration; check sun visor.
5.3C Check seat condition, operation, and mounting.
5.3D Check steps and grab handles.
5.3E Inspect mirrors, mountings, brackets, and glass.
5.3F Record all observed physical damage.
5.3G Lubricate all cab and hood grease fittings.
5.3H Inspect and lubricate door and hood hinges, latches, strikers, lock cylinders, safety latches, linkages, and cables.
5.3I Inspect cab mounting, hinges, latches, linkages, and ride height; service as needed.
5.4A Inspect A/C condenser and lines for condition and visible leaks; check mountings.
5.4B Check A/C system condition and operation; check A/C monitoring system, if applicable.
5.4C Check HVAC air inlet filters and ducts; service as needed.

SAMPLE PERFORMANCE TASKS

- Check oil pressure and record results.
- Locate and record any physical damage to a vehicle cab.
- Inspect cab safety devices and perform appropriate service if indicated.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair.
- Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacture allowances for each item on the work order.
- Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Science, Math, Math for Technology, Technology Literacy, Applied Communications, Problem-Solving, National Institute for Automotive Service Excellence (ASE), National Automotive Technician Education Foundation (NATEF), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), Secretary's Commission on Achieving Necessary Skills (SCANS), SkillsUSA.

DIESEL: PREVENTIVE MAINTENANCE INSPECTION

STANDARD 6.0

Students will demonstrate proper procedures for inspecting vehicle electrical/electronics systems and components.

LEARNING EXPECTATIONS

The student will:

6.1 Inspect vehicle battery and starting systems.
6.2 Inspect vehicle charging system.
6.3 Inspect vehicle lighting system.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

6.1A Inspects battery boxes, covers, and mountings.
6.1B Inspects battery hold-downs, connections, cables, and cable routing; services as needed.
6.1C Checks/records battery state-of-charge (open circuit voltage) and condition.
6.1D Performs battery load test (load/capacitance).
6.1E Inspects starter, mounting, and connections.
6.1F Engages starter and checks for unusual noises, starter drag, and starting difficulty.
6.2A Inspects alternator, mountings, wiring, cable, and wiring routing; determines needed action.
6.2B Performs alternator output tests.
6.3A Checks operation of interior lights and determines needed action.
6.3B Checks all exterior lights, lenses, reflectors and conspicuity tape; check headlight alignment; determine needed action..
6.3C Inspects and tests tractor-to-trailer multi-wire connectors, cables, and holders; determines needed action.

SAMPLE PERFORMANCE TASKS

- Perform complete battery inspection and perform appropriate service where indicated.
- Determine if headlights are in alignment and make adjustment if indicated.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair.
- Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacture allowances for each item on the work order.
- Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Science, Math, Math for Technology, Technology Literacy, Applied Communications, Problem-Solving, National Institute for Automotive Service Excellence (ASE), National Automotive Technician Education Foundation (NATEF), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), Secretary's Commission on Achieving Necessary Skills (SCANS), SkillsUSA.

DIESEL: PREVENTIVE MAINTENANCE INSPECTION

STANDARD 7.0

Students will demonstrate proper procedures for inspecting vehicle frames and chassis.

LEARNING EXPECTATIONS

The student will:

7.1 Inspect air brakes.
7.2 Inspect hydraulic brakes.
7.3 Inspect drive train.
7.4 Inspect suspension and steering systems.
7.5 Inspect tires and wheels.
7.6 Inspect frame and fifth wheel.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

7.1A Checks operation of parking brake
7.1B Records air governor cut-out setting (psi).
7.1C Checks operation of air reservoir/tank drain valve.
7.1D Checks air system for leaks (brakes released).
7.1E Checks air system for leaks (brakes applied).
7.1F Tests one-way and double-check valves.
7.1G Checks low air pressure warning devices.
7.1H Checks air governor cut-in pressure.
7.1I Checks emergency (spring) brake control/modulator valve, if applicable.
7.1J Checks tractor protection valve.
7.1K Tests air pressure build-up time.
7.1L Inspects coupling air lines, holders, and glad-hands.
7.1M Checks brake chambers and air lines for secure mounting and damage.
7.1N Checks operation of air drier.
7.1O Inspects and records brake shoe/pad condition, thickness, and contamination.
7.1P Inspects and records condition of brake drums/rotors.
7.1Q Checks antilock brake system wiring, connectors, seals, and harnesses for damage and proper routing.
7.1R Checks operation and adjustment of brake automatic adjusters (ASA); checks and records push rod stroke.
7.1S Lubricates all brake component grease fittings.
7.1T Checks condition and operation of hand brake (trailer) control valve.
7.1U Performs antilock brake system (ABS) operational system self-test.
7.1V Drains air tanks and check for contamination.
7.1W Checks condition of pressure relief (safety) valves.
7.2A Checks master cylinder fluid level and condition.
7.2B Inspects brake lines, fittings, flexible hoses, and valves for leaks and damage.
7.2C Checks parking brake operation; inspect parking brake application and holding devices; adjusts as needed.
7.2D Checks operation of hydraulic system: pedal travel, pedal effort, pedal feel (drift).

7.2E Inspects calipers for leakage and damage.
7.2F Inspects power brake assist system (booster), hoses; and control valves; checks brake assist; reservoir level and condition.
7.2G Inspects and records brake lining/pad condition, thickness, and contamination.
7.2H Inspects and records condition of brake rotors.
7.3A Checks operation of clutch, clutch brake, and gearshift.
7.3B Checks clutch linkage/cable for looseness or binding, if applicable.
7.3C Checks hydraulic clutch slave and master cylinders, lines, fittings, and hoses, if applicable.
7.3D Checks clutch adjustment; adjusts as needed.
7.3E Checks transmission case, seals, filter, hoses, and cooler for cracks and leaks.
7.3F Inspects transmission breather.
7.3G Inspects transmission mounts.
7.3H Checks transmission oil level, type, and condition.
7.3I Inspects U-joints, yokes, driveshafts boots/seals, center bearings, and mounting hardware for looseness, damage, and proper phasing.
7.3J Inspects axle housing(s) for cracks and leaks.
7.3K Inspects axle breather(s).
7.3L Lubricates all drive train grease fittings.
7.3M Checks drive axle(s) oil level, type, and condition.
7.3N Changes drive axle(s) oil and filter; checks and cleans magnetic plugs.
7.3O Changes transmission oil and filter; checks and cleans magnetic plugs.
7.3P Checks interaxle differential lock operation.
7.3Q Checks range shift operation.
7.4A Checks steering wheel operation for free play or binding.
7.4B Checks power steering pump, mounting, and hoses for leaks, condition, and routing; checks fluid level.
7.4C Changes power steering fluid and filter.
7.4D Inspects steering gear for leaks and secure mounting.
7.4E Inspects steering shaft U-joints, pinch bolts, splines, pitman arm-to-steering sector shaft, tie rod ends, and linkage, and linkage.
7.4F Checks king pin for wear.
7.4G Checks wheel bearings for looseness and noise.
7.4H Checks oil level and condition in all non-drive hubs; check for leaks.
7.4I Inspects springs, pins, hangers, shackles, spring U-bolts, and insulators.
7.4J Inspects shock absorbers for leaks and secures mounting.
7.4K Inspects air suspension springs, mounts, hoses, valves, linkage, and fittings for leaks and damage.
7.4L Checks and records suspension ride height.
7.4M Lubricates all suspension and steering grease fittings.
7.4N Checks toe setting.
7.4O Checks tandem axle alignment and spacing.
7.4P Checks axle locating components (radius, torque, and/or track rods).
7.5A Inspects tires for irregular wear patterns and proper mounting of directional tires.
7.5B Inspects tires for cuts, cracks, bulges, and sidewall damage.
7.5C Inspects valve caps and stems; replaces as needed.
7.5D Measures and records tread depth; probes for imbedded debris.
7.5E Checks and records air pressure; adjust air pressure in accordance with manufacturers' specifications.

7.5F Checks for loose lugs; checks mounting hardware condition; services as needed.
7.5G Torques lugs in accordance with manufacturer's specifications.

7.5H Inspects wheels for cracks or damage.
7.5I Checks tire matching (diameter and tread) on dual tire installations.
7.6A Inspects fifth wheel mounting bolts, air lines, and locks.
7.6B Tests operation of fifth wheel locking device; adjusts if necessary.
7.6C Checks quarter fenders, mud flaps and brackets.
7.6D Checks pintle hook assembly and mounting.
7.6E Lubricates all fifth wheel grease fittings and plate.
7.6F Inspects frame and frame members for cracks and damage.

SAMPLE PERFORMANCE TASKS

- Create a flow chart of the inspection process.
- Perform a complete maintenance inspection on a vehicle, including documentation.
- Identify and perform indicated maintenance and adjustments.
- Using case scenarios follow strategy based diagnostic procedure to verify the complaint, define the problem, isolate the problem, validate the problem, make the repair, and test the repair. Complete a repair order using technical writing skills and calculate salary earnings based on the repair order description and manufacture allowances for each item on the work order. Calculate manufacturer labor operation time used in the diagnostic process.

INTEGRATION LINKAGES

Communication Skills, Teamwork Skills, Computer Skills, Reading and Writing Skills, Language Arts, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, National Institute for Automotive Service Excellence (ASE), National Automotive Technician Education Foundation (NATEF), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), Secretary's Commission on Achieving Necessary Skills (SCANS), SkillsUSA.

DIESEL: PREVENTIVE MAINTENANCE INSPECTION

SAMPLING OF AVAILABLE RESOURCES

T8 Preventive Maintenance Inspection (PMI) Curriculum Module, AYES Corporation, www.ayes.org

2001 Medium/Heavy Duty Truck Task List, National Automotive Technicians Education Foundation (NATEF)

Diesel Technology: Workplace Skills, Instructional Materials Laboratory (IML), University of Missouri

Diesel Technology: Safety Skills, Instructional Materials Laboratory (IML), University of Missouri

Curriculum Integrator, CORD Communications, Waco, Texas 1998

Diesel Technology, Goodheart-Willcox, 2001.